

Recension of Mexican species of *Otopappus* (Asteraceae, Heliantheae)

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ABSTRACT

A taxonomic treatment of the Mexican species of *Otopappus* is rendered. With the positioning of two species into yet other genera as advocated by Strother (1999) and Panero (2007), and the description of a new taxon, ***Otopappus serboana*** B.L. Turner, **sp. nov.** from the state of Oaxaca, Mexican species now number 14. A photograph of the novelty is provided, along with distribution maps of the taxa concerned. The treatment is presented in the format of the author's on-going Comps of Mexico.

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KEY WORDS: Asteraceae, Heliantheae, *Otopappus*, Mexico, Oaxaca

OTOPAPPUS Benth.

Notoptera Urban

Shrubs, or scrambling or clambering tree-like leaners to 10 m high. Leaves opposite, simple, 3-nervate to subpinnately reticulate-veined with mostly harsh hairs (rarely not). Heads small to large, radiate or rarely not, 1-numerous in terminal or subterminal cymules. Involucres campanulate to hemispheric, 4-6 seriate, mostly strongly graduate, but the outermost series sometimes loose and leafy, longer than the head itself. Receptacles convex, paleate. Ray florets yellow, mostly 8-34 (rarely absent or much-reduced) pistillate, fertile. Disk florets white or yellow. Achenes, those of the disk, radially flattened to somewhat 3-sided with winged margins, these extending onto the 1 or 2 lateral awns, between the latter occur several or more, short scales, these often united into a crown. Base chromosome number, $x = 16$.

Type species, *Otopappus verbosinoides* Benth.

REFERENCES

- Hartman, R.L. and T.F. Stuessy. 1983. Revision of *Otopappus*... Syst. Bot. 8: 185-210.
 McVaugh, R. 1984. *Otopappus*, in Flora Novo-Galiciana 12: 648-658.
 Panero, J.L. 2007. *Tuxtla*, in Anderberg et al., Families and Genera Vascular Plants 8: 458.
 Strother, J.L. 1999. *Otopappus*, in Flora Chiapas 5: 82-84.
 Villasenor, J.L. and J.L. Strother. 1989. *Tuxtla*, a new genus for *Zexmenia pittieri* (Compositae: Heliantheae). Syst. Bot. 14: 529-540.

A genus of mostly shrubs or scrambling vine-like, clambering, plants to 10 m high. Hartman and Stuessy (1983) recognized 15 species for the genus, 13 of which occurred in Mexico. Subsequently, two of the Mexican species were transferred to other genera. Thus, McVaugh's *Otopappus jaliscensis*, was treated as belonging to the genus *Lasianthaea* by Hartman and Stuessy (1983); Strother (1999), however, positioned the taxon in the genus ***Lundellianthus***, where its true position seems to be. Likewise, *Otopappus pittieri* (Greenm.) B.L. Turner has recently been transferred to the monotypic genus ***Tuxtla*** (Strother 1999). As of now, with the description of ***O. serboana*** (below), the number of Mexican species appears to be 14.

KEY TO SPECIES

1. Heads radiate, if rays absent then the disk corollas yellow ...(4)
1. Heads eradiate; corollas white ...(2)
 2. Disk corollas not recurved at maturity; involucre bracts of middle and outer series 1/2 or less as long as the inner bracts and pales; Cam, Yuc, Qui**O. guatemalensis**
 2. Disk corollas markedly recurved at maturity; involucre bracts grading into the pales, not markedly set off as to size or texture; Ver, Oax, Tab, Cps ...(3)
3. Heads on ultimate peduncles mostly 5-15 mm long.....**O. curviflorus**
3. Heads on ultimate peduncles 0-5 mm long**O. brevipes**
- 4(1). Ray florets present, usually well-developed, pistillate, and fertile...(6)
4. Ray florets absent or much reduced and neuter, sterile ...(5)
5. Heads mostly in axillary clusters of 2-5; receptacular pales with subulate, markedly recurved, apices; Gue, Oax**O. mexicanus**
5. Heads 5-15 in both terminal and axillary clusters; receptacular pales with ovate, mostly erect, apices, or nearly so**O. robustus**
- 6(4). Involucres 5-10 mm high, 7-15 mm wide ...(7b)
6. Involucres 3-5(7) mm high, 4-7 mm wide...(7a)
 - 7a. Ray florets 30 +; disc florets 80 +; pales 6-7 mm long; Oax**O. serboanus**
 - 7a. Ray florets 13-15; disc florets 40-75; pales ca 5 mm long.....**O. microcephalus**
 - 7b. Receptacular pales erect, bristly-terete at the apices; leaves softly and densely pilose beneath; Jal **O. acuminatus**
 - 7b. Receptacular pales not as above, usually abruptly narrowed or flattened at the apices; leaves mostly sparsely to moderately pubescent beneath and rough to the touch ...(8)
8. Outermost involucre bracts appressed, or if somewhat loose then ovate to linear to linear-oblongate, not usually as long as the inner bracts...(10)
8. Outermost involucre bracts, oblongate to spatulate, loose, and foliaceous, often longer than the innermost involucre bracts ...(9)
9. Leaves smooth to slightly scabrous above with closely appressed hairs, the latter without enlarged basal cells; ray florets 8-14**O. verbesinoides**

9. Leaves markedly scabrous above with erect or ascending hairs, the latter with enlarged basal cells; ray florets mostly 15-28**O. scaber**
- 10(8). Margins of the leaf coarsely and irregularly dentate, the blades felty-pubescent beneath, mostly 1.5-2.0 times as long as wide; Gue, Mex, Mor, Pue**O. imbricatus**
10. Margins finely serrulate to nearly entire, the blades coarsely-pubescent beneath to nearly glabrous, mostly 2-4 times as long as wide ...(11)
11. Involucres mostly 12-20 mm wide ...(13)
11. Involucres mostly 6-10 mm wide ...(12)
12. Leaves elliptical, broadest at or near the middle; Ver[*O. pittieri*] **Tuxtla pittieri**
12. Leaves ovate, broadest at or near the base; Sin to Gue**O. tequilanus**
- 13(11). Leaves strigose on both surfaces with closely appressed hairs; ligules 15-18 mm long**O. koelzii**
13. Leaves scabrous, the lower surface with erect or ascending hairs; ligules 5-9 mm long**O. epaleaceus**

OTOPAPPUS ACUMINATUS S. Wats., Proc. Amer. Acad. Arts 26: 140. 1891.

Notoptera tequilana var. *acuminata* (S. Wats.) Blake

Otopappus tequilanus var. *acuminatus* (S. Wats.) B.L. Rob.

Known only from Jal, subtropical deciduous forests, steep slopes, 1200-1700 m; Jul-Oct. **Map 1**

Much resembling **O. tequilanus** but the receptacular bracts stiffly terete at the apices and the leaves densely softly pilose beneath; chromosome number, n = 16 pairs.

Hartman and Stuessy (1983) point out the distinctions between this taxon and **O. tequilanus**. McVaugh (1984) notes that the latter, quite variable, species occurs mostly at lower elevations (100-1300 m) along the Pacific slopes while the more uniform **O. acuminatus** appears to occur at higher elevations.

OTOPAPPUS BREVIPES B.L. Rob., Proc. Amer. Acad. Arts 44: 621. 1909.

Notoptera brevipes (B.L. Rob.) Blake

Otopappus glabratus (J. Coulter) Blake

Otopappus brevipes var. *glabratus* (J. Coulter) B.L. Rob.

Cps and Guatemala southwards, montane rain forests, 800-2100 m; Nov-Jan. **Map 1**

Much resembling **O. curviflorus** but the heads smaller, nearly sessile, and the corollas with broader throats and shorter lobes.

According to Hartman and Stuessy (1983), **O. brevipes** occurs at, generally, higher altitudes than **O. curviflorus** (450-2100 m vs 20-1300 m).

OTOPAPPUS CURVIFLORUS (R. Br.) Hemsl., Biol. Centr. Amer. Bot. 2: 191. 1881.

Notoptera curviflora (R. Br.) Blake

Notoptera scabridula Blake

Ver, Oax, Tab, Cps, Cam, Qui and Guatemala southwards, tropical lowland forests, 20-1000 m; Nov-Jun. **Map 1**

Erect or clambering shrubs 4-8 m high; leaves 4-18 cm long, 1-6 cm wide; petioles 3-18 mm long; blades ovate to broadly lanceolate, pinnately veined, mostly softly villous beneath, the margins serrate to nearly entire; heads campanulate, rayless, arranged in pyramidal corymbose panicles, the ultimate peduncles mostly 5-15 mm long; involucre 3-4 seriate, the bracts graduate and grading into the pales; ray florets absent; disk florets 30-50, the corollas white and strongly out-curved at maturity; achenes 2-3 mm long, the pappus of 2, unequally winged, awns 0.5-2.0 mm long.

Closely related to *O. brevipes* but clearly distinct and easily recognized by the characters given in the key. According to Strother (1999), however, the "Types of the names *Otopappus brevipes* and *O. curviflorus* may prove to be conspecific."

OTOPAPPUS EPALEACEUS Hemsl., Biol. Centr. Amer. Bot. 2: 191. 1881.

Notoptera epaleaceus (Hemsl.) Blake

Jal, Mic, Mex, Mor, Pue, Gue and Oax, tropical deciduous forests, 25-2000 m; Sep-Dec.

Shrubs, or scrambling vines; leaves 7-15 cm long, 2.5-6.5 cm wide; petioles 5-18 mm long; blades ovate, mostly thick and reticulate beneath, the vestiture rough to the touch, the margins serrulate; heads radiate, 3-7 in terminal or subterminal cymose clusters; involucre broadly campanulate to hemispheric, 8-15 mm high, 12-22 mm wide, the bracts in 6-8 series, graduate, the outermost somewhat loose and mostly 4-8 mm long; ray florets 21-43, the ligules yellow, 3-12 mm long; disk florets numerous (80-120), the corollas yellow; achenes 3-4 mm long, the pappus of 2, winged awns 1.5-3.5 mm long; chromosome number, $n = 16$ pairs.

A variable species but recognized by its few-headed cymules and large, mostly hemispheric, heads with 5-6 seriate involucre, the outer series loose but short. The undersurfaces of the leaves are mostly roughly hispid, but a few recent collections (*Guerrero 1083*, TEX) have a softly pilose vestiture, reminiscent of *O. acuminatus*, but other features are clearly those of *O. epaleaceus*.

OTOPAPPUS GUATEMALENSIS (Urban) Hartman & Stuessy, Syst. Bot. 8: 206. 1983. **Map 2**

Notoptera guatemalensis Urban

Notoptera leptcephala Blake

Cam, Yuc, Qui? adjacent Belize and Guatemala, tropical deciduous forests, 0-300 m; all seasons.

Superficially resembling *O. curviflorus* but readily distinguished by its narrow, few-flowered heads (12-18 florets vs 30-50) and markedly different involucral bracts, as noted in the key to species.

OTOPAPPUS IMBRICATUS (Sch.-Bip.) Blake, Contr. U.S. Natl. Herb. 26: 255. 1930.

Otopappus cordatus Blake

Otopappus epaleaceus var. *pringlei* Greenm.

Otopappus xanthocarphus Brandege

Mic, Mex, Mor, Pue and Gue in tropical deciduous or pine-oak forests, 800-1700 m; Jun-Oct. **Map 2**

Much resembling *O. epaleaceus* but the leaves characteristically strongly and closely dentate, the blades broadly ovate, 1-2 times as long as wide (vs 2-4), the undersurfaces prominently reticulate and mostly felty-pubescent; chromosome number, $n = 16$ pairs.

Vegetatively this appears to be a distinct taxon, the leaves being relatively broad and with strongly dentate margins. Hartman and Stuessy (1983) cite two specimens from Pue, both of which I would place elsewhere (*Torke et al. 319*, in *O. tequilanus*; *Johnston s.n.* in *O. epaleaceus*).

OTOPAPPUS KOELZII McVaugh, Contr. Univ. Michigan Herb. 9: 425. 1972.

Col, Jal and Mic, tropical deciduous forests, Pacific slopes, 50-600 m; Oct-Dec. **Map 2**

Much resembling **O. epaleaceus** but distinguished by its leaves that have relatively smooth undersurfaces with closely appressed, strigose, hairs (as opposed to erect or ascending hairs, especially along the veins), ligules 15-20 mm long (vs 5-10 mm), and disk corollas 6-7 mm long (vs 4-5 mm).

OTOPAPPUS MEXICANUS (Rzed.) H. Rob., Wrightia 6: 44. 1979.

Oyedaea mexicana Rzed.

Gue and Oax, Pacific slopes, tropical deciduous forests, 800-1000 m; Aug-Nov. **Map 2**

Clambering shrubs 1-10 m high; leaves 9-13 cm long, 3.5-5.5 cm wide; petioles 5-10 mm long; blades ovate, 3-nervate from or near the base, sparsely strigillose, the margins serrulate to nearly entire. Heads radiate, 1-5 in the leaf axils, the ultimate peduncles 3-12 mm long; involucre campanulate, 3-5 m high, 3-4 seriate, the bracts graduate; ray florets 8-15, neuter, sterile, the ligules 1-4 mm long, yellow; disk florets 50-80, the corollas yellow, those of the periphery recurved; achenes 2.5-3.0 mm long, the pappus of 2 winged awns, 1.2-2.0 mm long, between these a united crown of scales 0.3-0.8 mm long.

Hartman and Stuessy (1983) cited specimens of this taxon from Gue only. Subsequent collections from Oax have been obtained (*Roe 554*, WIS; *Turner 80A*, TEX).

OTOPAPPUS MICROCEPHALUS Blake, J. Bot. Brit. & For. 53: 232. 1915.

Nay, Jal, Col, Mic and Gue, tropical deciduous forests, Pacific slopes, 5-800 m; Aug-Dec. **Map 3**

Shrub or scrambling vine to 4 m high; leaves 5-12 cm long, 3-5 cm wide; petioles 3-8 mm long; blades ovate to ovate-lanceolate, 3-nervate from the base, sparsely pubescent with appressed hairs beneath, the margins serrulate to nearly entire; heads radiate, 15-70 in terminal corymbose panicles; involucre mostly 3.5-5.0 mm long, 4-6 mm wide, the bracts 3-4 seriate, graduate, the apices obtuse; ray florets 8-13, the ligules yellow, 1.5-3.0 mm long; disk florets 30-75, the corollas yellow; achenes 2-3 mm long, the pappus of 2 unequal awns, 0.3-2.5 mm long.

Hartman and Stuessy (1983) do not report collections from Nay or Mic; several recent collections have been obtained from these states. **Otopappus microcephalus** is similar to **O. serboanus** and **O. tequilanus**, the latter differing mostly by its longer rays, head size and more numerous florets.

OTOPAPPUS ROBUSTUS Hemsl., Biol. Centr. Amer. Bot. 2: 191. 1881.

Zexmenia robusta (Hemsl.) O. Hoffm.

In Mexico, known only from the type locality, vicinity of Cordoba, Ver, ca 1000 m; Mar. **Map 3**

Shrub or clambering vine; leaves 14-24 cm long, 5-8 cm wide; petioles 15-20 mm long; blades ovate, pinnately veined, strigillose above, tomentose beneath, the margins serrulate; heads eradiate, both terminal and axillary, forming a leafy terminal corymbose panicle, the ultimate peduncles 1-5 mm long; involucre 6-7 mm high, 8-10 mm wide, the bracts 4-5 seriate, graduate; rays absent; disk florets 35-45, the corollas yellow, 3-4 mm long; achenes 2-5 mm long, the pappus of 2 winged awns, 1.5-3.0 mm long, between these a crown of scales ca 1.3 mm long.

A poorly known species readily distinguished by its eradiate yellow heads.

OTOPAPPUS SCABER Blake, Contr. U.S. Natl. Herb. 22: 636. 1924.

Cps, Cam and adjacent Guatemala southwards, tropical deciduous forests, 100-1300 m; Oct-Dec. **Map 3**

This species resembles **O. verbessinoides** but the leaves are broader and coarsely hispidulous on both surfaces, and the heads broader with more numerous florets (80+ vs 30-70).

OTOPAPPUS SERBOANA B.L. Turner, *sp. nov.* **Fig 1**

Oax, coastal areas, 10-300 m, localized tropical deciduous forests; Aug-Oct. **Map. 3**
Shrubs, or clambering vines in trees up to 8 m high. **Stems** (upper) pubescent with minute, appressed, upswept hairs. **Leaves**, 6-14 cm long, 3-6 cm wide, opposite throughout, reportedly reflexed; petioles 0.6-1.2 cm long; blades ovate, 3-nerved from near the base, moderately pubescent above and below with short, mostly erect, broad-based hairs. **Capitulescence**, a terminal array of 3-10 heads, the ultimate peduncles 0.5-2.0 cm long. **Heads**, ca 8 mm high and as wide. **Involucres**, ca 4 mm high, 7 mm wide, broadly campanulate. **Involucral bracts**, 4-5 seriate, graduate, broadly ovate, their apices reflexed at maturity, appressed-pubescent throughout. **Receptacle** convex, ca 4 mm across, the pales numerous, linear lanceolate, persistent, 5-6 mm long, ca 0.6 mm wide, their apices sharply acute and somewhat reflexed. **Ray florets** pistillate, fertile, numerous (30 +); ligules yellow, ca 3 mm long, 0.7 mm wide. **Disc florets**, yellow, numerous (80 +); corolla ca 4 mm long, glabrous; tube ca 1 mm long, grading into the throat; lobes ca 0.5 mm long. **Anthers** brown, their apical appendages ovate, glandless. **Achenes** (immature), ca 1.5 mm long, glabrous; pappus a prominently winged awn ca 2 mm long.

TYPE: MEXICO. OAXACA: Distrito Pochutla; Mpio. San Pedro Huamelula, "Desviacion a Chacalapa, 300 m al N rumbo a San Isidro Chacalapa." ca 160 m; 15 52 41 N, 95 56.9 W, 30 Oct 2000, *Silvia H. Salas M. 3448* [with M. Elorsa C. & A. Sanchez] (Holotype: TEX).

ADDITIONAL SPECIMENS EXAMINED: MEXICO. OAXACA. Distrito Pochutla; Mpio. San Pedro Pochutla, "Coastal Region of Oaxaca along a dirt road to Tahueco, ca. 1 km SW of Hwy 200, 11 km ENE of Puerto Angel." 129 m, "Dense tropical deciduous forest." 3 Aug 2003, *Salvato 349* (TEX). **Mpio. Santa Maria Huatulco**, "160mts.[sic] (L.R.) 178 grados de la entrada hacia la laguna del zanate sobre el Sendro del Caminante." 15 43 59.7 N, 96 09 15.1 W, ca 10 m, 29 Oct 2004, *Martinez 228* (TEX).

The Martinez and Salvato specimens, cited above, are very immature (lacking well-defined rays or disc florets), and when initially examined I took these to be *Otopappus microcephalus*; subsequent examination of the Type of *O. serboana*, possessing flowering heads, showed the plants to have a number of features that distinguished the taxon, as noted below. The sterile plants clearly belong to the novelty described here, having most of its features.

Salvato notes the plant to be an "Uncommon rambling shrub ca 4 ft tall."

Otopappus serboana is clearly related to *O. microcephalus*, occupying a similar shore line habitat, but is readily distinguished from the latter by its mostly larger, fewer, heads and more numerous ray and disc florets.

The species is named for the organization of SERBO, which funded its collection.

OTOPAPPUS TEQUILANUS (S. Wats.) B.L. Rob., Proc. Amer. Acad. Arts 44: 622. 1909.

Notoptera tequilanus (S. Wats.) Blake

Otopappus salazari Blake

Otopappus tequilanus var. *griseus* McVaugh

s Sin, Zac, Nay, Jal, Col, Mic, Mor, Pue and Gue, tropical deciduous and pine-oak forests, mostly Pacific slopes, 100-1300 m; Aug-Nov. **Map 4**

Vegetatively and in vestiture, much resembling *O. microcephalus*, but in head size, floret number and ray length much closer to *O. acuminatus*; chromosome number, $n = 16$ pairs.

Hartman and Stuessy (1983) did not recognize the var. *griseus* but McVaugh (1984) retained the taxon, distinguishing this largely by its leaves, which were said to be "silvery white beneath with closely aggregated stiff appressed hairs and very fine cottony hairs." He noted that the characteristic gray vestiture of the leaves may be partly due to a fungal infection. On total characters, however, the variety appears too weakly differentiated for recognition.

OTOPAPPUS VERBESINOIDES Benth., Hooker's Icon. Pl. 12: 47. 1873.

Otopappus trinervis Blake

Ver, Oax, Cps and Guatemala southwards, tropical evergreen cloud forests, 20-2100 m; Aug-Feb.

Map 4

Shrubs or clambering woody vines to 12 m high; leaves 7-16 cm long, 1.5-5.0 cm wide; petioles 3-10 mm long; blades narrowly ovate, attenuate apically, 3-nervate and reticulate-veined beneath, strigillose with appressed hairs, the margins serrulate; heads radiate, 3-10 in terminal or subterminal cymose clusters; involucre campanulate 4-6 mm high, 5-11 mm wide, the bracts 4-5 seriate, the outer series green and loose, oblanceolate, often longer than the inner bracts; ray florets 8-15, pistillate, fertile, the ligules 3-15 mm long, yellow; disk florets 30-70, the corollas yellow, achenes 3-5 mm long, the pappus of a single awn 2.5-3.0 mm long, the scales united into a crown 1.0-1.5 mm long.

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LITERATURE CITED

[See **REFERENCES** just after the generic description, above.]

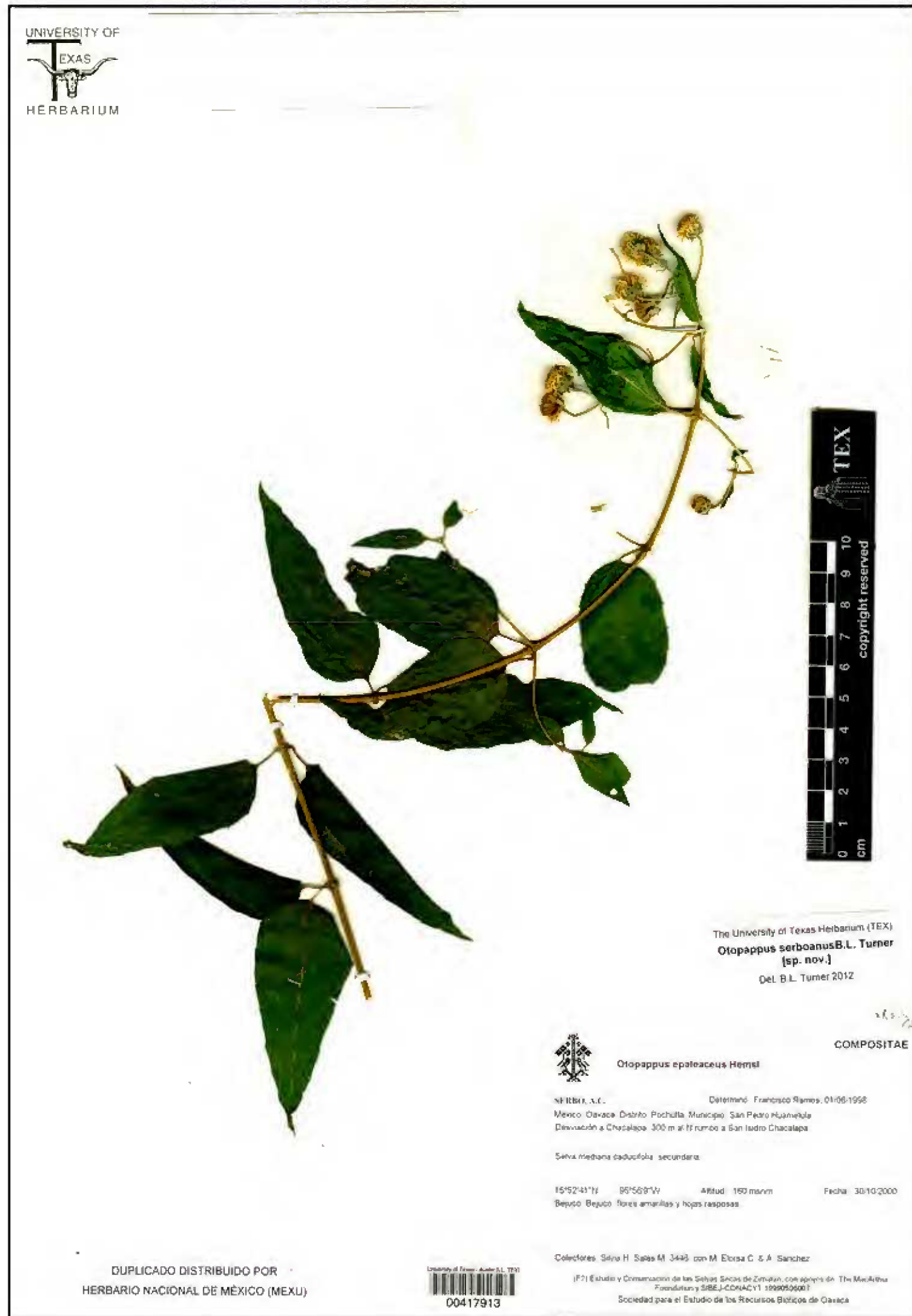


Fig. 1. OTOPAPPUS SERBOANA B.L. Turner, sp. nov.

